

Split Sampling and Analysis Plan for
Riverside Agricultural Park
Riverside, California

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1.0 INTRODUCTION

The purpose of this one-time sampling event is to confirm the adequacy of previous TSCA PCB clean-up activities at a residential redevelopment site in Riverside, California. The 62-acre site, Riverside Agricultural Park, has undergone extensive remediation to remove PCB-contaminated soil.

Local community members have indicated that they are concerned that the assessment and remediation activity was conducted by the site developer under California DTSC's voluntary cleanup program and they distrust the data provided by the developer. As such, DTSC has agreed to conduct soil sampling for PCBs and other contaminants to confirm the site's adequacy for redevelopment. With heightened public interest in this site, the EPA Land Division has committed to collecting and analyzing co-located samples with DTSC to confirm adequacy of the remediation.

Up to 20 soil samples (co-located with DTSC soil samples) will be collected. Samples will be analyzed at the EPA Region 9 Laboratory for PCBs as Aroclors. The sampling is planned for Tuesday/Wednesday, September 1-2, 2015.

1.1 Site Name or Sampling Area

The site name is Riverside Agricultural Park.

1.2 Site or Sampling Area Location

Riverside Agricultural Park is located in Riverside, California. As a redevelopment site, it does not have a street address, but is the 62-acre vacant lot that is adjacent to the intersection of Jurapa and Crest Avenues in the city of Riverside (Figures 1, 2).

1.3 Responsible Agency

The Land Division (LND) is supporting state partner DTSC in addressing community concerns. Within EPA Region 9, sample plan review will be conducted by the Region 9 Quality Assurance Office (MTS-3), and the soil samples will be analyzed by the EPA Region 9 Laboratory (MTS-2). Soil samples will be collected by LND division (Katherine Baylor).

1.4 Project Organization

Title/Responsibility	Name	Phone Number
EPA Project Manager	Sara Ziff	415-972-3536
SAP, Lab Coordination, sampling	Katherine Baylor	415-972-3351
QA Manager	Eugenia McNaughton	415-972-3411
Analytical Laboratory – EPA R9 Lab	Rich Bauer	510-412-2312

1.5 Statement of the Specific Problem

The goal of this one-time split sampling event is to address community concerns about the adequacy of remediation of the Riverside Ag Park site. The site has a lengthy use and remediation history, but PCBs are the primary contaminant of concern.

1.6 Proposed Sampling Date

The proposed split sampling activity is planned for September 1-2, 2015.

2.0 BACKGROUND

Multiple documents are available on DTSC's Envirostor system and were reviewed for preparation of this sampling and analysis plan. Available documents may be found here:

http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=33490087

2.1 Site or Sampling Area Description

From Envirostor: "The Site is located towards the east of the intersection of Crest and Jurupa Avenues in Riverside, California. With the exception of two north trending drainages, the Site is generally level. The drainages merge and leave the Site towards the northwest and join with the Santa Ana River. The Site is predominantly undeveloped, except for a roof structure in the central portion of the Site. Residential developments exist adjacent to the southern, eastern and western boundaries of the Site. The residences on the western boundary are separated from the Site by heavy vegetation, an unimproved road shoulder, Crest Avenue, and a sidewalk on the western side of Crest Avenue. Open space borders the northern boundary. Norte Vista High School and the Terrace Elementary School are within a half mile radius of the Site, buffered by residential development."

2.2 Operational History

From Envirostor: "From 1942 through 1965 sewage treatment operations were conducted on Site by various operators. The current owner, the City of Riverside has owned the facility since 1962. Sewage treatment operations were ceased in 1965. From that time through 1999, the Site was intermittently used as a park. According to the information provide by the Proponent, sampling activities were conducted at the Site by Geomatrix Consultants. The VCA Application indicates that polychlorinated biphenyls (PCBs) from non-detectable levels to 3100 milligrams per kilogram (mg/kg) were detected in soil samples collected from the Site.

A Response Plan was approved by DTSC in August 2006. The approved Response Action Plan removal action was delayed due to unforeseen circumstances and changes in the economy. The removal action work was divided into two phases, a Phase 1 and Phase 2. Phase 1 work was completed in 2010 and resulted in the removal of 8,666 tons of contaminated soil. As of September 2013, the Phase 2 removal action activities were underway. Removal of up to 150,000 tons of low-level, PCB contaminated soil will be excavated, removed and transported to an approved disposal facility. This removal work is conducted by Friends of the Riverside Airport (FRA) under an agreement with DTSC. The Site is slated for residential development. The City of Riverside is working with DTSC to conduct an off site study of the the impacts of the Riverside Ag Park contamination on off site areas. This work is being conducted concurrently to the Ag Park cleanup."

2.3 Previous Investigations and Regulatory Involvement

EPA has not been involved with this site prior to 2015. EPA is supporting state partner DTSC in their effort to address community concerns.

2.4 Geological Information

Soils on-site generally consist of loose decomposed granite which extends to the depth of this investigation (maximum of eight feet below ground surface).

2.5 Environmental and/or Human Impact

The primary risk driver for this project is risk to human health from exposure to PCBs. Extensive soil remediation (dig/haul) has been conducted at the site, so it is anticipated that current PCB concentrations will be low.

3.0 PROJECT DATA QUALITY OBJECTIVES

3.1 Data Quality Objectives

The technical approach for the proposed assessment activity is presented in the context of the Data Quality Objectives (DQO) development process described in the EPA QA/G-4 document. The DQO process provides a mechanism to develop a sampling program that meets overall project needs.

3.1.1 Problem Statement

Site soils may contain PCBs above EPA's risk-based concentration of 0.22 mg/kg.

3.1.2 Goals of the Study

The sampling and analytical activities described in this document are intended to supplement an extensive data set collected over many years. The goal, generally, is to confirm existing data from the developer that indicates that on-site soil concentrations are generally below EPA's risk-based 0.22 mg/kg total PCB goal. Each individual sample result need not be below 0.22 mg/kg if the overall statistical analysis is below the 0.22 mg/kg goal. More broadly, EPA's split samples, which will be collected in parallel with DTSC staff, are intended to provide an independent data set for community members who distrust both the developer and DTSC. The DTSC data set is the primary data set that will be used for decision-making purposes.

3.1.3 Information Inputs

Data inputs used to make the decisions described above include historical, field and analytical data derived from the following sources:

- Soil samples collected and analyzed during implementation of this Sampling and Analysis Plan.

3.1.4 Study Boundaries

This proposed assessment includes soil samples collected within the 62-acre Riverside Ag site. The sampling will be conducted from September 1-2, 2015.

3.1.5 Decision Rules

The primary decision intended for this project is: 1) provide an independent data set (i.e., independent of DTSC) to assuage community concerns with DTSC oversight of this Voluntary Cleanup Program site. DTSC's data set will be the primary data set that will be used for decision-making purposes. If PCBs on-site are found to be significantly above the risk-based goal of 0.22 mg/kg, the developer will conduct additional assessment and remediation as needed.

3.1.6 Limits on Decision Error

The split sampling measures two types of decision errors: sampling design errors and measurement errors. Sampling design errors are a function of the selection of sample locations and sample collection methods used to characterize the site to be studied. Measurement errors are a function of the chemical analyses that are used to collect the data. Measurement errors may arise regardless of the sampling design. Although measurement errors or variability cannot be eliminated, they can be controlled by careful selection of the sampling and analytical procedures.

3.1.7 Sampling Rationale and Design

This sampling and analysis plan is intended to provide confirmation of previous assessment and remediation activities. In consultation with the local community, grid sampling was selected as the preferred sampling strategy (Figure 3). DTSC will sample surface soils (0-3" bgs) from 39 locations, and, at the request of the community, will additionally sample three depths (2, 5, and 8 feet bgs) from five of the 39 surface soil locations (Figure 3, orange dots). EPA will split sample a maximum of 20 DTSC sample locations (including two field duplicates).

3.2 Data Review and Validation

The internal data validation performed at EPA's Region 9 Laboratory (the analytical laboratory for this project) is adequate to meet project objectives.

4.0 FIGURES AND TABLES

Table 1. Request for Analysis Table

Figure 1. Site Location Map

Figure 2. Riverside Agricultural Park aerial photo

Figure 3. Soil Sample Location Map

5.0 RATIONALE FOR SAMPLE LOCATIONS, NUMBER OF SAMPLES, AND ANALYTICAL PARAMETERS

A maximum of 20 soil samples will be collected. Samples will be co-located with DTSC samples and may include both surface and depth samples distributed across the 62-acre site.

5.1 Request for Analysis

PCBs: A maximum of 20 soil samples will be extracted (Soxhlet, EPA 3540 or equivalent) and analyzed at the EPA Region 9 Laboratory for PCB Aroclors by EPA Method 8082 (R9 Lab SOP 335).

The Tabular Request for Analysis is attached (Table 1). All samples will be analyzed at the EPA Region 9 Laboratory in Richmond, California. The standard quantitation limits for these analyses performed at the EPA Region 9 laboratory are adequate to meet project goals.

6.0 FIELD METHODS AND PROCEDURES

6.1 Sample Collection

Grid sampling locations (Figure 3) have been surveyed and staked prior to sampling. At each sampling point, the DTSC staff sampler will use a disposable plastic scoop to collect approximately 8 oz. of soil from the selected location and then distribute the soil sample uniformly between the DTSC and EPA sampling jars for that location. Given the extensive amount of remediation and soil re-working at the Riverside Ag site, the soil is expected to be relatively homogeneous, so field homogenization is not necessary.

All soil samples will be collected within the 62-acre parcel. To minimize waste generation, sampling equipment such as plastic scoops and disposable gloves may be re-used for several sampling locations. This method will eliminate a significant amount of waste material produced, and result in little increased likelihood of cross-contamination.

6.2 Disposal of Contaminated Materials (Investigation Derived Waste)

All disposable sampling equipment (i.e., gloves, scoops, paper towels) and related IDW will be bagged in a plastic garbage bag and disposed in accordance with local, state, and federal regulations. Existing site data indicates that all such waste is non-hazardous.

6.3 Decontamination

Only disposable equipment will be used, so no equipment decontamination is needed. The soil at the Riverside Ag site is dry, loose sandy soil (decomposed granite); if a significant amount of soil sticks to the plastic scoop, it will be wiped off with a paper towel.

6.4 Sample Containers

The Request for Analysis Table (Table 1) lists all the containers that will be used for this sampling event. All containers have been purchased certified clean from the manufacturer. The containers for this event will be 4 oz. wide mouth glass jars. Jars will be filled completely (approximately 120 grams), which will provide sufficient mass for PCB analysis.

6.5 Sample Preservation

No chemical preservation will be used. Samples will be chilled to 4°C after collection and during transport to the EPA Region 9 Laboratory.

6.6 Sample Shipment and Packaging

All sample jars will be securely packaged and placed in a cooler for transport to the EPA Region 9 analytical laboratory. Samples will be hand-delivered to the EPA Region 9 Laboratory o/a Thursday, September 3.

Samples will be hand-carried to:

US EPA Region 9 Laboratory
1337 South 46th Street, Bldg 201
Richmond, CA 94804
Attn: Sample Custodian
Phone: 510-412-2389

Samplers will notify the EPA Region 9 Laboratory RSCC (Regional Sample Control Coordinator) via email (R9RSCC@epa.gov) that the samples have been delivered, and provide the following information:

Sampler name and call-back number
Case #
Site name
coolers
samples/cooler
Matrix
Analyses

6.7 Field Documentation

Sampling Map / Photos: Field personnel will use Figure 3 (grid sampling map) as the primary method of field documentation. Field personnel will note on Figure 3 and/or in a field logbook the split sampling locations (and depth if relevant) and any unusual conditions about the sample (texture, odor, staining).

Chain of Custody Paperwork: Chain of custody forms and field QA/QC summary forms will be filled out by EPA personnel for all samples collected. A chain of custody form will be completed for each cooler. All chain of custody forms and custody seals will be signed and dated by a member of the EPA sampling team.

Custody Seals: Individual sampling jars will not be custody-sealed, but the cooler liner that contains the samples (i.e., plastic garbage bag) will be custody sealed to ensure sample integrity. Custody seals will also be placed on the outside of the cooler, including at least one custody seal extending across the front opening and one across the back. Custody seals will be signed and dated by a member of the EPA field sampling team.

Sample Labels: Each sample will be labeled with a unique sample identifier, case number, date of collection, type of analysis and sampler. Sample ID numbers for this project will be the grid numbers on Figure 3. For example, the sample from the grid location at the northwest corner of the site will be labelled "RivAg-B2-Surf" for the surface soil sample. The depth sampling grid locations (grids D3, E4, C5, D7 and F7 on Figure 1) will be labelled with the sampling depth, such as "RivAg-F7-5" for the 5 feet bgs sampling depth in grid F7.

6.8 Quality Control Samples

6.8.1 Field Duplicates

Field duplicate samples will be collected at the rate of one per ten samples collected, so two field duplicate samples will be collected for this event. The locations of the duplicate samples have not been pre-selected, but will be selected in the field. Given the extensive soil remediation and soil re-working at the site, it is unlikely that any locations will show physical evidence of contamination (i.e., staining, odors), so the duplicate sample locations will be collected at any convenient location.

EPA field personnel will ensure that the environmental and duplicate sample are as similar as possible in material type and quantity of material collected. Bottles will be filled simultaneously, so that the material is as similar as feasible. Each sample from a duplicate pair will have a unique sample number; the duplicates will be sent "blind" to the lab. Samplers will note the field duplicate ID numbers in field notes and on the Field QC summary form.

6.8.2 Blank Samples

No blank sample will be collected.

6.8.3 Reference Samples

No reference ('background') samples will be collected.

6.8.4 Lab QC Sample

Lab QC samples will be collected at a rate of one per 20 samples or one per event if fewer than 20 samples are collected. For this event, one lab QC sample will be collected. Typically, a single volume soil sample is sufficient volume for the lab QC sample, and the laboratory personnel select the lab QC sample from the available sample set, so the QC sample will not be selected in the field, but will be selected by the laboratory analyst.

7.0 HEALTH AND SAFETY PLAN

A separate health and safety plan has been prepared for this event and is available on request.

Table 1 Request for Analysis Table						
Site		Riverside Ag Park				
Chemistry Type		Organic			Inorganic	
Analysis Requested			Aroclor PCBs			
Method			R9 LAB SOP 335			
Matrix			soil			
Preservatives			Chill to 4°C			
Analytical Holding Time			40 days			
	number and type of containers per analysis		4 oz. jar			
Sample ID	Date					
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
TBD	September 2015		1			
Total Number of Bottles			15			

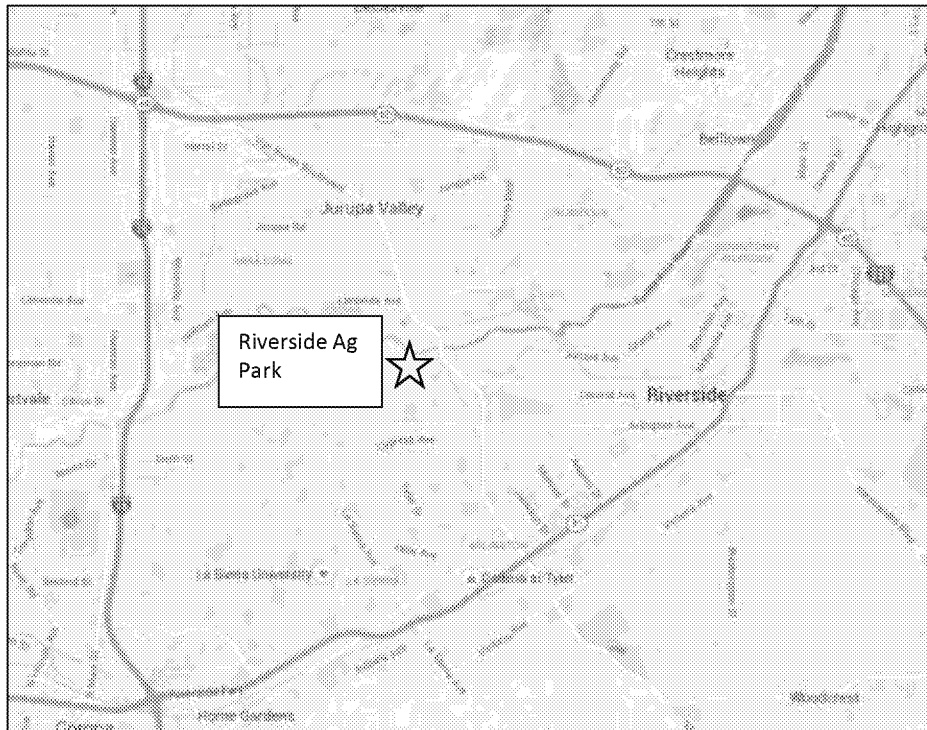


Figure 1. Site Location Map (Riverside, California)



Figure 2. 62-acre Riverside Agricultural Park redevelopment site (base image: 2014 Google Earth)